

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) Apparatus, comprising:

a die;

a heat spreader; and

a thermal intermediate material comprised of a plurality of carbon nanotubes blended with solder, the thermal intermediate material interposed in a gap between the die and the heat spreader, wherein some of the carbon nanotubes of the plurality of carbon nanotubes are chemically bonded to the solder.

2. (Canceled)

3. (Currently Amended) The apparatus of claim [[2]]1, wherein the some of carbon nanotubes of the plurality of carbon nanotubes are pre-coated with a metal prior to blending with the solder.

4. (Currently Amended) The apparatus of claim [[2]]1, wherein some of the carbon nanotubes are decorated with metal.

5. (Original) The apparatus of claim 3, wherein the metal is platinum.

6. (Original) The apparatus of claim 3 wherein some of the carbon nanotubes are pre-coated with a metal to wet the solder to bond it to the carbon nanotubes.

7. (Original) The apparatus of claim 3, wherein the metal is selected from the group consisting of gold, platinum, silver and palladium and alloys comprising one or more of gold, platinum, silver and palladium.

8. (Withdrawn) The apparatus of claim 1, wherein some of the carbon nanotubes are aligned in the thermal intermediate material along the heat flow path between the die and the heat spreader.

9. (Original) The apparatus of claim 1 wherein the nanotubes are randomly oriented in the thermal intermediate material and have average lengths less than about 10 percent of the gap between the die and the heat spreader.

10. (Original) The apparatus of claim 1 wherein the solder is indium.

11. (Previously Presented) The apparatus of claim 1:

wherein the thermal intermediate material comprises a matrix, wherein the matrix exhibits a phase change between about 100° C and about 230° C.; and

wherein the thermal intermediate material includes a distribution of the carbon nanotubes in the matrix having a length range from about 0.5 micron to about 10 micron, and wherein the interstitial carbon nanotube heat transfer structures occupy from less than about 5 to about 30 volume percent of the thermal intermediate material.

12. (Previously Presented) The apparatus of claim 11, wherein the matrix is a metal selected from the group consisting of indium or an indium alloy.

13. (Previously Presented) The apparatus of claim 12, wherein the carbon nanotubes are decorated with metal.

14. (Previously Presented) The apparatus of claim 13 wherein the metal is selected from the group consisting of platinum, gold, silver and palladium and their alloys.

15. - 23. (Canceled)

24. (Original) A computing system, comprising:

at least one dynamic random access memory device;

a die including a die surface and a circuit to electrically couple to the memory device;

a heat sink; and

a thermal intermediate structure interposed between the die surface and the heat sink and comprising a plurality of carbon nanotubes, some of which are decorated with metal and blended with solder.

25. (Original) The system of claim 24, wherein the circuit comprises a processor that acts upon data signals, and may include, for example, a microprocessor.

26. (Original) The system of claim 24, wherein the metal is one or more metals selected from the group consisting of platinum, gold and silver and alloys of one or more of platinum gold and silver.

27. (Original) The system of claim 24 wherein the solder is indium.